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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,691	09/30/2004	Chad Rue	FIS920040175US1	5690
29371	7590	01/11/2006		EXAMINER
CANTOR COLBURN LLP				YANTORNO, JENNIFER M
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BLOOMFIELD, CT 06002				
			ART UNIT	PAPER NUMBER
				2881

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/711,691	RUE ET AL.
	Examiner	Art Unit
	Jennifer Yantorno	2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-19 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 9/30/2004 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. "TEOS with O<sub>2</sub>" is repeated twice, but to the best of the examiner's understanding, one of those instances should be "TMCTS with O<sub>2</sub>".

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama (5,708,371) in view of Suzuki (US 4,555,626).

Regarding claim 1, '371 teaches providing a cooling unit for cooling a sample by way of thermoelectric cooling. '371 teaches a thermoelectric module and a sample mounted on a mounting surface of the thermoelectric module wherein the thermoelectric module is configured so as to reduce the temperature of the sample with respect to the ambient (Col. 10, ll. 5-20, and Fig. 14). '371 not explicitly teach that the system is a FIB system, but is instead a laser scanning microscope, which are art-recognized equivalents. '371 also does not teach a base member. '626 teaches in Figure 1 a base

plate (9) with a thermoelectric module (3, 5) disposed over the base member. It would have been obvious to one skilled in the art at the time of the invention to include a base member to thermo-conductively connect the base member to a heat sink to remove the excess heat from the sample and the thermoelectric modules.

Regarding claims 2 and 12, '371 teaches that the thermoelectric module comprises a Pelteir device (Col. 10, ll. 10-15).

Regarding claim 3, '626 teaches that the thermoelectric module is configured to draw heat from the sample and exhaust the heat through the base member (Col. 3, ll. 50-55 and Fig. 1).

Regarding claim 4, '626 teaches that the thermoelectric module is electrically coupled to a current source through an electrical connector disposed through a vacuum chamber wall (Fig. 1).

Regarding claim 5, '626 teaches a thermal ballast module mounted on the base member (Fig. 1, #10).

Regarding claims 6 and 7, '626 teaches the claimed invention except for the thermal ballast being adjacent to, or mounted beneath, the thermoelectric module. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to make the thermal ballast adjacent to or mounted beneath the thermoelectric module since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

Regarding claim 11, '371 teaches mounting a sample on a mounting surface of a laser scanning microscope, said mounting surface including a thermoelectric element,

controlling the thermoelectric elements so as to reduce the temperature of the sample with respect to an ambient temperature and applying a laser to the sample (Col. 10, II. 5-20 and Fig. 14).

Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama (5,708,371) in view of Suzuki (US 4,555,626), further in view of Harrison et al. (US 2002/0162339).

Regarding claim 8, the aforementioned prior art meets all claim limitations with the exception of the construction of the thermal ballast. '339 teaches a thermal ballast comprising a sealed hollow vessel and a plurality of internal fins configured for facilitating heat transfer from the base member to an internal ballast material (Paragraphs 0043, 0044, 0053 and 0054, and Fig. 2, #14 and #11). Although '339 does not explicitly disclose that the ballast vessel and fins are made of high thermal conductive and high heat capacity material, it would be obvious to one of ordinary skill in the art to fabricate these elements out of heat conductive and capacitive materials to make a more efficient thermal ballast that rapidly removes heat from the sample.

Regarding claim 9, '339 teaches a plurality of cooling ports within the base member for receiving a cooling medium circulated therethrough supplied by a cooling supply line (Paragraph 0065, 0066 and Fig. 3).

Regarding claim 10, '339 teaches that the cooling supply line is coupled to a cooling medium connector disposed through insulation (Paragraph 0053).

Claims 13, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama (5,708,371) in view of Suzuki (US 4,555,626), further in view of Huynh (US 6,863,787).

Regarding claim 13, '787 teaches using the FIB to deposit a layer on the sample (Col. 7, II. 26-28). It would have been obvious to one skilled in the art at the time of the invention to deposit a layer on the sample using the FIB as this is a well-known use of the FIB.

Regarding claim 17, '787 teaches that the metal layer deposited uses tungsten hexacarbonyl (Col. 7, II. 26-28).

Regarding claim 18, '787 teaches utilizing the FIB in a removal process to remove material from said sample (Col. 4, II. 66-Col. 5, II. 6).

Regarding claim 19, '787 teaches the removal process comprising milling copper using an  $XeF_2$  precursor (Table 1).

Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama (5,708,371) in view of Suzuki (US 4,555,626), further in view of Huynh (US 6,863,787), further in view of Ring et al. (US 6,372,627).

Regarding claims 14-16, the aforementioned prior art meet all claim limitations with the exception of the  $SiO_2$  insulating layer being deposited using a silicon-bearing precursor such as TMCTS with  $O_2$ . '627 teaches all of this (Col. 7, II. 58-Col. 8, II. 23). It would have been obvious to one skilled in the art at the time of the invention to deposition a silicon dioxide layer in this manner as it is well-known in the art.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Yantorno whose telephone number is (571) 272-5918. The examiner can normally be reached on Monday-Friday, 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Lee can be reached on (571) 272-2477. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JY

  
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